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We study the problem of economical representation of subsets of structured sets, that is, sets equipped with a set cover. Given a structured set  $U$ , and a language  $L$  whose expressions define subsets of  $U$ , the problem of Minimum Description Length in  $L$  ( $L$ -MDL) is: "given a subset  $V$  of  $U$ , find a shortest string in  $L$  that defines  $V$ ". We show that the simple set cover is enough to model a number of realistic database structures. We focus o ...

#### 4 A multidimensional and multiversion structure for OLAP applications

Mathurin Body, Maryvonne Miquel, Yvan Bédard, Anne Tchounikine

November 2002 **Proceedings of the 5th ACM international workshop on Data Warehousing and OLAP**

Full text available:  pdf(349.70 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

When changes occur on data organization, conventional multidimensional structures are not adapted because dimensions are supposed to be static. In many cases, especially when time covered by the data warehouse is large, dimensions of the hypercube must be redesigned in order to integrate evolutions. We propose an approach allowing to track history but also to compare data, mapped into static structures. We define a conceptual model building a Mutiversion Fact Table from the Temporal Multidimensi ...

**Keywords:** OLAP, conceptual model, data warehouse, temporal evolution

#### 5 Database session 4: heterogeneous and distributed systems: Towards integrative enterprise knowledge portals

Torsten Priebe, Günther Pernul

November 2003 **Proceedings of the twelfth international conference on Information and knowledge management**

Full text available:  pdf(696.91 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Knowledge portals make an important contribution to enabling enterprise knowledge management by providing users with a consolidated, personalized user interface that allows efficient access to various types of (structured and unstructured) information. Today's portal systems allow combining access modules to different information sources side by side on a single portal webpage. However, there is no interaction between those so called portlets. When a user navigates within one portlet, the others ...

**Keywords:** OLAP, information retrieval, integration, knowledge management, portals, semantic web

#### 6 Probabilistic wavelet synopses

Minos Garofalakis, Phillip B. Gibbons

March 2004 **ACM Transactions on Database Systems (TODS)**, Volume 29 Issue 1

Full text available:  pdf(396.77 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Recent work has demonstrated the effectiveness of the wavelet decomposition in reducing large amounts of data to compact sets of wavelet coefficients (termed "wavelet synopses") that can be used to provide fast and reasonably accurate approximate query answers. A major shortcoming of these existing wavelet techniques is that the quality of the approximate answers they provide varies widely, even for identical queries on nearly identical values in distinct parts of the data. As a result, users ha ...

**Keywords:** Wavelets, approximate query processing, data synopses, randomized rounding

#### 7 A survey on wavelet applications in data mining

Tao Li, Qi Li, Shenghuo Zhu, Mitsunori Ogihara

December 2002 **ACM SIGKDD Explorations Newsletter**, Volume 4 Issue 2

Full text available:  pdf(330.06 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Recently there has been significant development in the use of wavelet methods in various data mining processes. However, there has been written no comprehensive survey available on the topic. The goal of this is paper to fill the void. First, the paper presents a high-level data-mining framework that reduces the overall process into smaller components. Then applications of wavelets for each component are reviewed. The paper concludes by discussing the impact of wavelets on data mining research an ...

## 8 Approximate query processing using wavelets

Kaushik Chakrabarti, Minos Garofalakis, Rajeev Rastogi, Kyuseok Shim

September 2001 **The VLDB Journal – The International Journal on Very Large Data**

**Bases**, Volume 10 Issue 2-3

Full text available:  pdf(390.24 KB) Additional Information: [full citation](#), [abstract](#), [citing](#), [index terms](#)

Approximate query processing has emerged as a cost-effective approach for dealing with the huge data volumes and stringent response-time requirements of today's decision support systems (DSS). Most work in this area, however, has so far been limited in its query processing scope, typically focusing on specific forms of aggregate queries. Furthermore, conventional approaches based on sampling or histograms appear to be inherently limited when it comes to approximating the results of complex queri ...

**Keywords:** Approximate query answers, Data synopses, Query processing, Wavelet decomposition

## 9 Contributions: focus: new visualization techniques: Visualizing multi-dimensional data

Stephen G. Eick

February 2000 **ACM SIGGRAPH Computer Graphics**, Volume 34 Issue 1

Full text available:  pdf(1.92 MB) Additional Information: [full citation](#), [references](#), [citing](#)

## 10 Query optimization for OLAP-XML federations

Dennis Pedersen, Karsten Riis, Torben Bach Pedersen

November 2002 **Proceedings of the 5th ACM international workshop on Data Warehousing and OLAP**

Full text available:  pdf(205.89 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The changing data requirements of today's dynamic business environments are not handled well by current OLAP systems. Physically integrating unexpected data into such systems is a long and time-consuming process making logical integration, i.e., federation, the better choice in many situations. The increasing use of Extended Markup Language (XML), e.g. in business-to-business (B2B) applications, suggests that the required data will often be available as XML data. This means that logical federati ...

**Keywords:** OLAP, XML, database federations, query optimization

## 11 Research sessions: compression: Wavelet synopses with error guarantees

Minos Garofalakis, Phillip B. Gibbons

June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on Management of data**

Full text available:  pdf(1.44 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citing](#), [index](#)



terms

Recent work has demonstrated the effectiveness of the wavelet decomposition in reducing large amounts of data to compact sets of wavelet coefficients (termed "wavelet synopses") that can be used to provide fast and reasonably accurate approximate answers to queries. A major criticism of such techniques is that unlike, for example, random sampling, conventional wavelet synopses do not provide informative error guarantees on the accuracy of individual approximate answers. In fact, as this paper de ...

## 12 Conceptual multidimensional data model based on object-oriented metacube

Nguyen Thanh Binh, A. Min Tjoa

March 2001 **Proceedings of the 2001 ACM symposium on Applied computing**

Full text available:  [pdf\(306.39 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

**Keywords:** OLAP, cube, dimensions, drillingDown, measures, rollingUp

## 13 Data warehousing in an integrated health system: building the business case

Edward F. Ewen, Carl E. Medsker, Laura E. Dusterhoft

November 1998 **Proceedings of the 1st ACM international workshop on Data warehousing and OLAP**

Full text available:  [pdf\(870.47 KB\)](#) Additional Information: [full citation](#), [references](#), [citing](#), [index terms](#)

**Keywords:** DSS, IDS, IHS, OLAP, data warehouse, decision support system, healthcare, integrated delivery system, integrated health system, on-line analytical processing

## 14 Wireless and mobile computing: Accessing multidimensional data through natural text-based user interactivity

Richardus Eko Indrajit, Elwin Ardririanto, Ferdi Aria Sukmana

January 2004 **Proceedings of the winter international symposium on Information and communication technologies**


Full text available:  [pdf\(184.10 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Until currently, the common techniques in accessing a multidimensional data is perceived to be in a complex form since it is presented within the OLAP interactivity mode environment. The advantages of using such OLAP approach is that it hides almost entirely and transparently the complexity of building SQL syntax for any kind of report view perspectives that an end user might want to produce. However, this OLAP kind of end user experience obviously needs adequate device, processing, and memory c ...

## 15 Reports: Report on the 5<sup>th</sup> international workshop on the design and management of data warehouses (DMDW'03)

Hans J. Lenz, Panos Vassiliadis, Manfred Jeusfeld, Martin Staudt

December 2003 **ACM SIGMOD Record**, Volume 32 Issue 4

Full text available:  [pdf\(150.79 KB\)](#) Additional Information: [full citation](#)

## 16 A powerful and SQL-compatible data model and query language for OLAP

Dennis Pedersen, Karsten Riis, Torben Bach Pedersen

January 2002 **Australian Computer Science Communications , Proceedings of the**

**thirteenth Australasian conference on Database technologies - Volume 5,**  
Volume 24 Issue 2

Full text available:  pdf(1.12 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper we present the SQLM OLAP data model, formal algebra, and query language that, unlike current OLAP data models and languages, are both *powerful*, meaning that they support irregular dimension hierarchies, automatic aggregation of data, and correct aggregation of data, and *SQL-compatible*, allowing seamless integration with relational technology. We also consider the requirements to the data model posed by integration of OLAP data with external XML data. ...

**Keywords:** OLAP, data integration, data models, multidimensional databases, query languages

**17 A robust, optimization-based approach for approximate answering of aggregate queries**

Surajit Chaudhuri, Gautam Das, Vivek Narasayya

May 2001 **ACM SIGMOD Record , Proceedings of the 2001 ACM SIGMOD international conference on Management of data**, Volume 30 Issue 2

Full text available:  pdf(221.91 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The ability to approximately answer aggregation queries accurately and efficiently is of great benefit for decision support and data mining tools. In contrast to previous sampling-based studies, we treat the problem as an *optimization* problem whose goal is to minimize the error in answering queries in the given workload. A key novelty of our approach is that we can tailor the choice of samples to be robust even for workloads that are "similar" but not necessarily identical ...

**18 Knowledge discovery in data warehouses**

Themistoklis Palpanas

September 2000 **ACM SIGMOD Record**, Volume 29 Issue 3

Full text available:  pdf(240.77 KB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

As the size of data warehouses increase to several hundreds of gigabytes or terabytes, the need for methods and tools that will automate the process of knowledge extraction, or guide the user to subsets of the dataset that are of particular interest, is becoming prominent. In this survey paper we explore the problem of identifying and extracting interesting knowledge from large collections of data residing in data warehouses, by using data mining techniques. Such techniques have the ability to i ...

**19 Using wavelet decomposition to support progressive and approximate range-sum queries over data cubes**

Yi-Leh Wu, Divyakant Agrawal, Amr El Abbadi

November 2000 **Proceedings of the ninth international conference on Information and knowledge management**

Full text available:  pdf(256.55 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** data cube, progressive query, query approximation, wavelet transform

**20 A multidimensional modeling approach for OLAP within the framework of the relational model based on quotient relations**

O. Mangisengi, A. M. Tjoa

November 1998 **Proceedings of the 1st ACM international workshop on Data warehousing and OLAP**

Full text available:  [pdf\(645.72 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

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